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United States Department of Agriculture

Forest Service

Durango, Colorado

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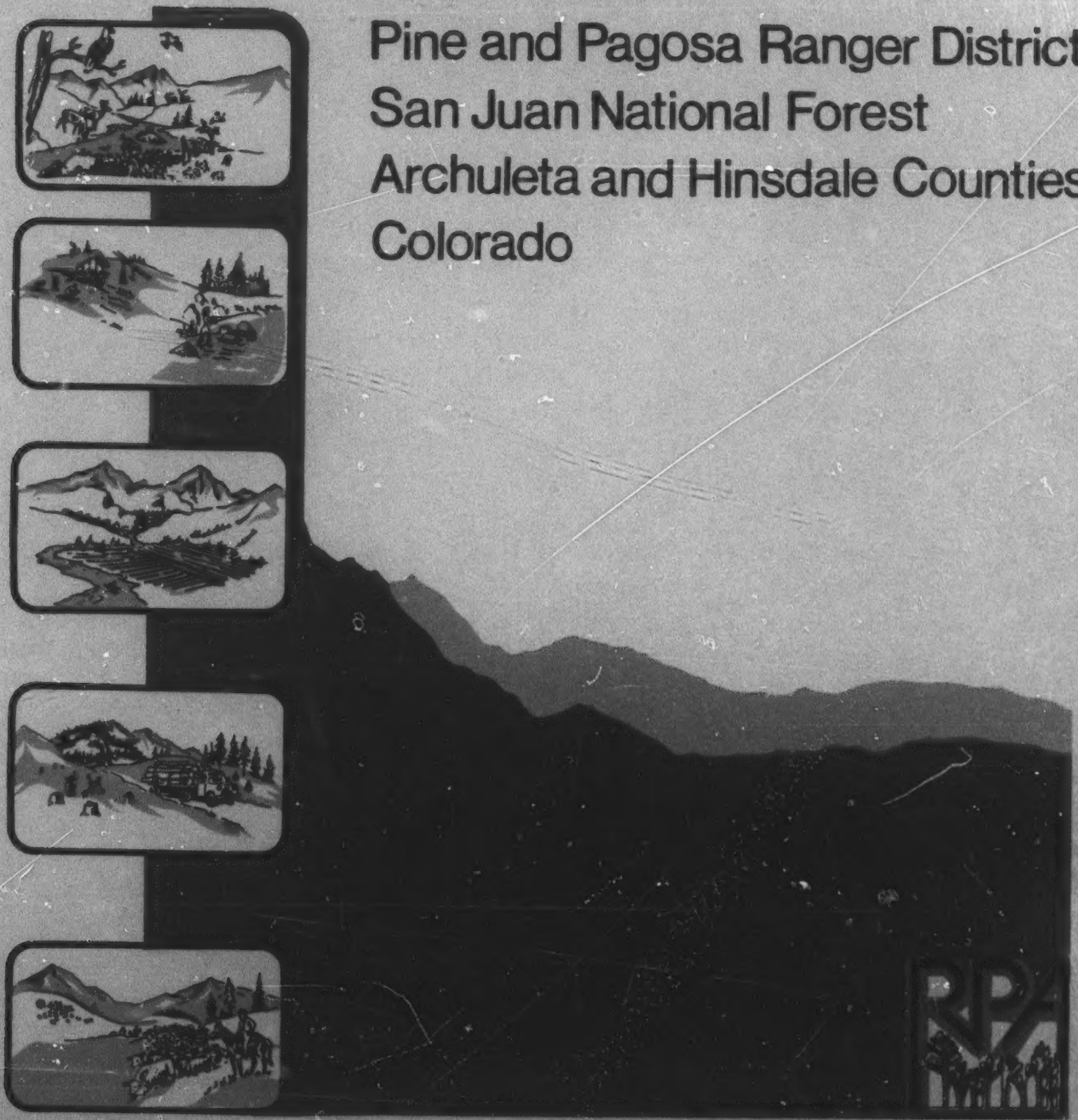
DRAFT REPORT
Piedra Wilderness Study Area

Pine and Pagosa Ranger Districts
San Juan National Forest
Archuleta and Hinsdale Counties
Colorado



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DRAFT REPORT

PIEDRA

WILDERNESS STUDY AREA

May 1982

SAN JUAN NATIONAL FOREST

PINE AND PAGOSA RANGER DISTRICTS

ARCHULETA AND HINSDALE COUNTIES

COLORADO

DRAFT REPORT

Piedra Wilderness Study Area
San Juan National Forest

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CHAPTER I

PURPOSE AND NEED

INTRODUCTION

The Piedra Wilderness Study Area (WSA) was established by Congress in Public Law 96-560, known as the Colorado Wilderness Act of 1980. The Act requires the Secretary of Agriculture to review the Piedra WSA and make a recommendation as to its suitability or unsuitability for inclusion in the National Wilderness Preservation System (NWPS) by December 31, 1983. This report, although not a decision document as such, discloses environmental consequences of implementing the proposed action and alternatives to it. Environmental consequences relating to land and activities of other Federal, State and local agencies are also discussed. The Forest Service recommendation applies only to lands under its jurisdiction and will be documented in a Record of Decision.

This summary of information, which relates directly to the Piedra WSA, is taken from the draft Environmental Impact Statement for the San Juan National Forest Land and Resource Management Plan and the Forest Plan planning records.

NATURE AND PURPOSE OF ACTION

The Piedra Wilderness Study Area was identified as a potential wilderness area several years ago. Its roadless and undeveloped character caused it to be included in the first Forest Service Roadless Area Review and Evaluation (RARE) in 1973. The purpose of RARE was to identify and inventory roadless and undeveloped areas which might be suitable candidates for inclusion in the National Wilderness Preservation System (NWPS). The Piedra WSA was identified as a candidate.

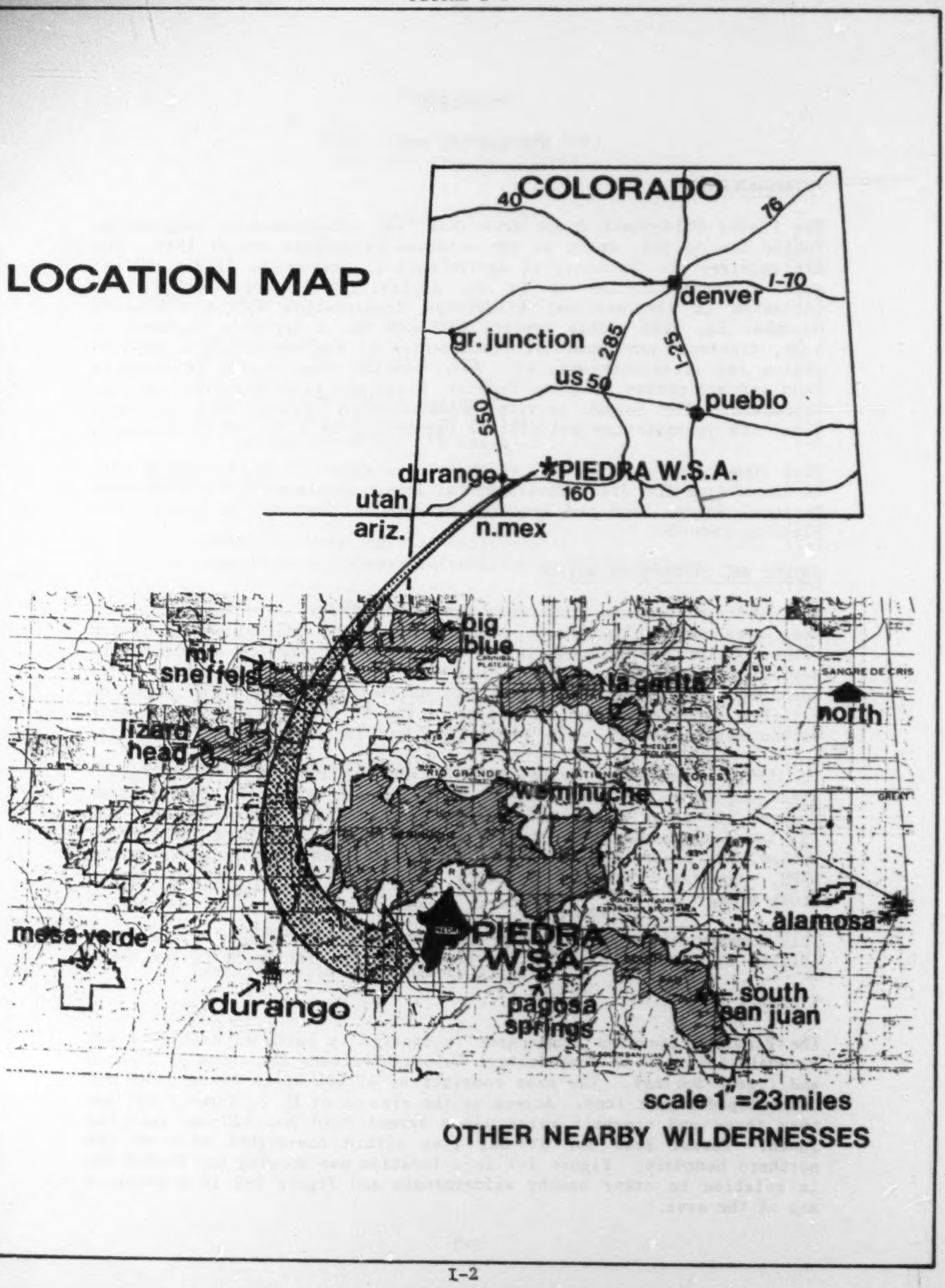
In 1977 a subsequent review, RARE II, was implemented to identify (1) areas suitable for inclusion in the National Wilderness Preservation System; (2) areas needing no further consideration for wilderness; and (3) areas that should be studied further. As a result of the RARE II review, the Piedra WSA was recommended to Congress for inclusion in the NWPS. Congress, however, formally established the Piedra Wilderness Study Area.

This summary report consolidates and discloses the analysis of the suitability or unsuitability of the Piedra WSA for inclusion in the NWPS.

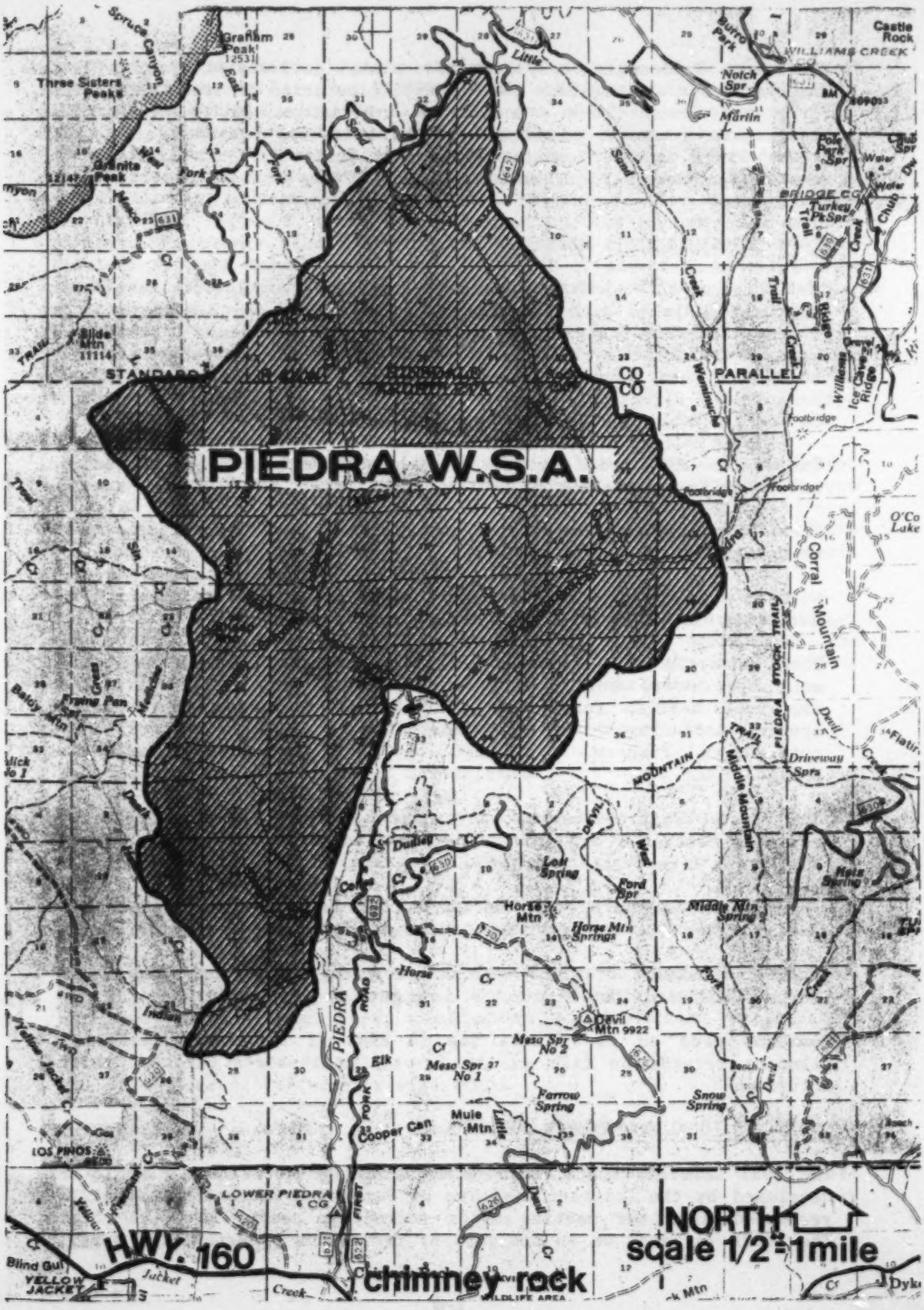
VICINITY

The Piedra Wilderness Study Area is located in parts of Archuleta and Hinsdale Counties in southwestern Colorado between the towns of Durango and Pagosa Springs. The area consists of 41,500 acres of unroaded and undeveloped forest land. Access to the area is by U. S. Highway 160 and then three and one-half miles along Forest Road No. 620-622 from the south. Forest Road No. 631-642 lies within one-eighth mile of the northern boundary. Figure I-1 is a location map showing the Piedra WSA in relation to other nearby wildernesses and Figure I-2 is a detailed map of the area.

FIGURE I-1


LOCATION MAP
COLORADO
40
76
I-70
denver
gr. junction
285
I-25
US 50
pueblo
550
durango
*PIEDRA W.S.A.
160
utah
ariz.
n.mex
big blue
mt. sneffels
la garita
SANGRE DE CRIS
north
lizard head
weminuche
mesa verde
durango
PIEDRA W.S.A.
pagosa springs
alamosa
south san juan
scale 1"=23miles
OTHER NEARBY WILDERNESSES

FICURE I-2


PIEDRA W.S.A.
HWY. 160
chimney rock
NORTH
scale 1/2"=1mile
Graham Peak 12531
Three Sisters Peaks
Granite Peak 12147
Spruce Canyon
Castle Rock
WILLIAMS CREEK
Notch Spr
Martin
BRIDGE CG
Turkey Pt Spr
Bilde Mtn 11114
STANDARD
PARALLEL
Footbridge
Corral Mountain
STOCK TRAIL
PIEDRA TRAIL
MOUNTAIN
Middle Mountain
Driveway Spr
Dudley
Lost Spring
Ford Spr
Horse Mtn
Horse Mtn Springs
Middle Mtn Spring
Hole Spring
Horse Cr
Devil Mtn 9922
Mesa Spr No 2
Mesa Spr No 1
Farrow Spring
Snow Spring
Mule Mtn
Cooper Can
PIEDRA ROAD
Elk
FORK
FIRST
LOWER PIEDRA
6 CG
LOS PINOS
Indian
Blind Gulch
YELLOW JACKET
Jacket Creek
WILDLIFE AREA
Dyke

The Piedra Wilderness Study Area lies almost entirely within the Piedra River drainage and includes the primary tributaries of Sand Creek, First Fork, and Sheep Creek. Boundaries are determined by well-defined topographic features on about one-third of the proposed area. The Piedra River is the dominant geographic feature of the area and the general landform is southward sloping and deeply dissected by streams and rivers.

SCOPE OF ISSUES TO BE ADDRESSED

Public issues to be addressed were identified through public involvement efforts associated with the Forest Plan. In the initial phase of the process, Federal, State and local agencies and the general public were asked to validate previously identified issues and define new ones. These were then grouped according to similarity in content. Some of these relate directly to the suitability or unsuitability of the Piedra WSA for inclusion in the NWPS, and these are listed below:

-The Piedra WSA should be made a wilderness. The Piedra is beautiful and wildlife is abundant.

-There is enough or too much wilderness already; no further areas should be designated.

-With or without wilderness designation, mineral resources must still be available for exploration, discovery, and development.

-The Piedra WSA is a scenic area that is important wildlife habitat for many species of both big game and nongame wildlife. It includes important habitat for Federal and State endangered and threatened species including river otter and peregrine falcon, as well as an outstanding fishery. It must be protected through wilderness designation.

-The Piedra WSA provides an opportunity to add an example of the lower mountain ecosystem and provide needed diversification to the National Wilderness Preservation System.

-Designation of the Piedra WSA would provide added protection for the Piedra River (if it is added to the Wild and Scenic Rivers System).

-Economic analysis of timber production would most certainly disqualify large portions of the Piedra WSA from such production.

Comments made on the Piedra WSA in RARE II are summarized in the planning records on file in the Forest Supervisor's Office, Durango, Colorado.

STATE AND LOCAL GOVERNMENT POLICIES

The 1981 Colorado State Comprehensive Outdoor Recreation Plan (SCORP) developed by the Colorado Division of Parks and Recreation, identifies recommendations for meeting major recreation needs within the State. The SCORP is based on an analysis of recreation opportunities supplied

not only by the State, but by the private sector and other levels of government as well. The SCORP divides the State into 13 Planning Regions, and the Piedra WSA falls into two of these. That portion of the WSA in Archuleta County is Planning Region 9, and that portion in Hinsdale County is in Planning Region 10. The SCORP identifies activities on Forest Service land within these Regions that receive significantly greater public use than current facilities can accommodate. For Region 9, these "needed" opportunities include back-country camping and nature study. For Region 10, these "needed" opportunities include fishing and nature study. The SCORP recommends that the Forest Service focus priorities on providing these additional recreation opportunities.

There are no existing land use plans for either Hinsdale or Archuleta County.

WILDERNESS SUITABILITY CRITERIA

Standards to be met by areas in the National Wilderness Preservation System (NWPS) were established in the 1964 Wilderness Act. Forest Service policies require that an area's wilderness capability, availability, and need be evaluated prior to determining the suitability or unsuitability for inclusion in the NWPS. These suitability criteria are defined as follows:

Capability: Capability indicates the degree to which an area possesses the basic characteristics necessary for wilderness designation and manageability without regard to availability for wilderness or need as wilderness. Indicators of wilderness capability include:

1. The natural integrity and apparent naturalness of the area.

2. Outstanding opportunities for solitude.

3. Opportunities for a primitive and unconfined type of recreation.

4. Manageability of the area as wilderness.

5. Supplemental attributes such as the presence of outstanding ecological, geological, scenic, or historical features.

Availability: Availability indicates the degree to which an area can be committed to wilderness purposes in light of competing demands for other resource uses of the area. Indicators of wilderness availability include:

1. The value of the area as wilderness.

2. Existing constraints and encumbrances on the land.

3. The effect of wilderness designation and management on adjacent lands.

Need: Need indicates the presence of clear evidence supporting current or future public need for additional designated wilderness in the Nation, the Region, and the State. In determining need, consideration is given to whether the tangible and intangible wilderness values determined in the capability analysis outweigh the potential value of nonwilderness resource uses. Indicators of the need for wilderness include:

1. Other wildernesses in the area.

2. Present and anticipated visitor pressure on other wildernesses in the area.

3. Opportunities for unconfined outdoor recreation experiences on nearby lands.

4. Ability of plant and animal species on the area to compete with people and projects.

5. The need to provide sanctuary for species that are unable to survive in less primitive surroundings.

6. The ability to provide for preservation of unique land form types and ecosystems.

CHAPTER II

ALTERNATIVES

OVERVIEW

Because the Colorado Wilderness Act of 1980 directed the Forest Service to address the suitability or unsuitability of the Piedra Wilderness Study Area for inclusion in the National Wilderness Preservation System, there are two alternatives to be considered: 1) a recommendation as suitable for wilderness designation, 2) a recommendation as unsuitable. The Act also provides that wilderness potential be maintained during the study period.

The analysis of suitability or unsuitability of the Piedra Wilderness Study Area (WSA) was done through the San Juan National Forest Land and Resource Management Planning process now under way. In the draft Environmental Impact Statement (EIS), which discloses environmental consequences of the Proposed Action and its alternatives, both the suitability and unsuitability of the WSA are discussed in detail in the context of the overall management of the Forest. A recommendation will be made in the Record of Decision in the final EIS for the Forest Plan. This recommendation will receive further review and possible modification in the offices of the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. The President will transmit the Administration's final recommendation to Congress. Final decisions on wilderness designation have been reserved by Congress.

"SUITABLE FOR WILDERNESS" ALTERNATIVE

This alternative would involve a recommendation to Congress that the entire Piedra Wilderness Study Area (41,500 acres) is suitable for inclusion in the National Wilderness Preservation System.

"UNSUITABLE FOR WILDERNESS" ALTERNATIVE

This alternative would indicate that the entire Piedra WSA is unsuitable for inclusion in the National Wilderness Preservation System and should be managed for non-wilderness purposes. After Congressional concurrence, management of the area would be dictated through the San Juan National Forest planning process. Estimation of resouce outputs and costs associated with this alternative is based upon the maximum resource development that could reasonably occur. No time lag was assumed in converting from current management to maximum resource development.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table II-1 summarizes the environmental consequences of both the suitable and unsuitable alternatives for the Piedra WSA. Shown are selected outputs and values which would be derived from managing the area as either wilderness or non-wilderness. A more detailed discussion is presented in Chapter IV.

TABLE II-1

Summary of Environmental Consequences (Outputs are per annum)

Resource	Suitable Alternative #1	Unsuitable Alternative #2
WILDERNESS		
Potential loss of wilderness character	None	Increased
Addition to National Wilderness Preservation System	41,500 acres	-0-
RECREATION OPPORTUNITY		
Dispersed recreation opportunity	-0-	242.5 Thousand Visitor Days
Wilderness recreation opportunity	52.7 Thousand Visitor Days	-0-
Area open to off-road vehicle use	-0-	31,125 acres (accessible by ORV's)
FISH AND WILDLIFE		
Habitat improvement opportunities	Limited	Many
RANGE LIVESTOCK		
Grazing Use	2,860 Animal Unit Months	3,875 Animal Unit Months
Grazing capacity	No change	Increased
TIMBER		
Forest land capable for timber production	-0-	40,018 acres
Long-term Sustained Yield Potential	-0-	6.0 Million Board Feet

TABLE II-1 (Cont.)

Summary of Environmental Consequences (Outputs are per annum)

	Suitable Alternative #1	Unsuitable Alternative #2
WATER QUALITY		
Risk of pollution caused by recreation and other use	Possible	Increased
Risk of pollution caused by surface disturbing activities	Decreased	Increased
WATER USES		
Feasibility of planned or proposed water developments	Not feasible at this time.	Not feasible at this time.
Likelihood of development of water storage facilities	Low	Low
Effects on existing water uses	None	None
WATER QUALITY		
Water yield	41,500 Acre-Feet	44,860 Acre-Feet
MINERALS		
Cost of mineral exploration	Increased	No change
Likelihood of significant mineral discovery and development	Low	Low
Costs of administering mineral activity	Increased	No change
LANDOWNERSHIP		
Likelihood of future private ownership under mineral patents	Decreased	No change
PROTECTION		
Integrated Pest Management Opportunities	Decreased	Increased

SUMMARY OF WILDERNESS SUITABILITY OR UNSUITABILITY ANALYSIS

Suitability for wilderness requires that an area be found (1) capable, (2) available, and (3) needed for wilderness. A summary of this analysis follows.

IS THE AREA CAPABLE FOR WILDERNESS DESIGNATION?

In order to address this criterion, both physical characteristics and manageability were evaluated. The Wilderness Attribute Rating System (WARS), which was developed in RARE II to indicate relative wilderness quality, was used. The WARS rating for the 300 RARE II areas in Colorado ranged from 12 to 26 with a median of 19. The rating scale itself ranges from four to 28. The Piedra WSA has a WARS rating of 24, which is the highest of the 38 RARE II areas on the San Juan National Forest. This also places it within the top five percent of Colorado RARE II areas. These WARS ratings for Wilderness Study Areas were re-confirmed in the present planning process. (Detailed WARS worksheets are in the planning records on file in the Forest Supervisor's Office.

The Piedra WSA was also determined to be manageable as wilderness. Boundaries are such that conflicts with outside uses can be minimized; they can be readily described and recognized on the ground; in many areas they conform with topographic barriers which isolate the area from the sights and sounds of civilization; and they provide adequate opportunity for public access.

The high WARS rating combined with the fact that the area could be readily managed as wilderness indicate that the Piedra WSA is capable of wilderness designation.

IS THE AREA AVAILABLE FOR WILDERNESS?

In order to address this criterion, the values of the area as wilderness and as non-wilderness were compared. Included in the analysis were mineral, water, recreation, timber, and grazing values foregone as well as wilderness, and recreation values accrued under a wilderness designation. Significant findings follow:

The area contains approximately 40,000 acres of land capable of timber production, which could produce a maximum sustained yield of nearly 6 million board feet per year. All of this would be foregone under a wilderness designation, although this amount was determined not needed to meet timber goals established under the preferred alternative of the Forest Plan.

No minerals extraction has occurred on the area since the 1930's. Twelve unpatented claims exist, but no reserves have been identified. The area has an overall low minerals potential, making any significant minerals development unlikely. Nevertheless, there is a possibility that under the suitable alternative mineral discoveries would be foregone following withdrawal of the lands from location and leasing.

Wilderness designation would prohibit motorized access to the area for hunting, fishing, and other recreation activities, although the area is generally not accessible by motor vehicles and therefore motorized use is minimal. The suitable alternative would not detract from the high quality hunting and fishing opportunities available in the area.

Existing encumbrances on the land are limited to several mining claims and a powersite withdrawal of approximately 2,000 acres. Both mining and power production could represent uses that are incompatible with the wilderness character of the area, although development has not taken place under either type of encumbrance. There are no other constraints, encumbrances, or incompatible uses on the land that would lessen wilderness character or potential. Analysis also indicates that the suitable alternative would not adversely effect management on adjacent lands.

Based on the analysis, the area is available for wilderness designation. Resource opportunities foregone under the suitable alternative would not significantly impair the ability to meet Forest-wide objectives. Other lands within the National Forest System can be used to meet resource objectives at a relatively low opportunity cost.

IS THE AREA NEEDED FOR WILDERNESS?

There are presently over 1.3 million acres of wilderness within a hundred mile radius of the Piedra WSA. Of the additional one-half million acres which are currently being studied for inclusion in the NWPS, approximately half are on Forest Service land and half on Bureau of Land Management land. Thus, strictly from the standpoint of the concentration of wilderness within the vicinity of the Piedra WSA, it would appear that additions to the National Wilderness Preservation System (NWPS) are not needed.

But there are considerations relating to "need" other than gross acreage of wilderness. One of these is the ability to preserve identifiable ecosystems through wilderness designation. The Piedra WSA has an abundance of low elevation Rocky Mountain ecosystem types. This is fairly uncommon in light of the preponderance of high elevation ecosystem types on currently designated wildernesses. Designation of the Piedra WSA would preserve these ecosystems in an unmodified state and would add physical and ecological diversity to the NWPS. Thus, the need for the area as wilderness is more to complement the NWPS by preserving lower elevation ecosystems than merely to make additional wilderness area available. The need for the area as wilderness would be to provide for the protection and preservation of low elevation Rocky Mountain ecosystems.

PREFERRED ALTERNATIVE

Based on capability, availability, and need, as well as overall management direction outlined in the Forest Plan, the Piedra WSA is recommended as suitable for addition to the National Wilderness Preservation System.

CHAPTER III

AFFECTED ENVIRONMENT

The suitability or unsuitability of Piedra WSA for wilderness designation is a function of the physical, biological, social, and economic environment within and surrounding the WSA. This chapter describes the various environmental factors related to this suitability determination. Chapter IV describes the effects on the environment resulting from implementation of the alternatives.

PHYSICAL SETTING

VEGETATION

Vegetation on the area varies with elevation, which ranges from 6,800 to 10,500 feet. Coniferous vegetation occurs over 70 percent of the area with the Douglas-fir type being most predominant (50 percent of total area); spruce-fir is second (17 percent of total area); and ponderosa pine, although common at lower elevations, is the least common coniferous type (three percent of total area). Aspen stands are scattered throughout, and these cover approximately 25 percent of the total area. Table III-1, which lists frequency of occurrence of various ecosystem types on the Piedra WSA in comparison with other wildernesses, points out the uniqueness of the vegetation composition of the Piedra WSA. Alpine and subalpine types, which are common on the other four areas, are not represented on the Piedra WSA. Conversely, Douglas-fir and aspen types, which are uncommon on all four other areas, are extensive or common on the Piedra WSA.

The non-timbered portion of the study area (five percent) is covered by grasses, rock, or riparian vegetation. Browse is represented in only a few scattered areas mostly at lower elevations. There are no known threatened or endangered plants present.

LANDFORM

The area lies on the northern edge of the Navajo Section of the Colorado Plateau. The general landform is characterized by south-facing slopes that are deeply dissected by the Piedra River and associated side drainages. A few isolated plateau-like areas are scattered throughout. The Piedra River is the dominant drainage feature of the WSA.

GEOLOGY

The geological setting of the Piedra Wilderness Study Area (WSA) consists of a sequence of sedimentary rock layers overlying a Precambrian basement of granite and quartzite. One major and several minor northwest-trending faults cut the entire sequence of rocks. The sedimentary series of rocks is made up of about 2,600 feet of limestones, sandstones, siltstones and shales ranging in age from Cambrian to Early Cretaceous. The sequence is exposed in several canyons, most notably that of the Piedra River. Portions of the Piedra canyon floor

TABLE III-1

Representative Ecosystems in the Piedra Wilderness Study Area and Nearby Wildernesses

Ecosystem	Piedra WSA	Weminuche	South San Juan	Lizard Head	La Garita
ALPINE	None	Common	Common	Common	Extensive
SUBALPINE	None	Common	Common	Common	Common
SPRUCE-FIR	Common	Common	Common	Uncommon	Common
DOUGLAS-FIR	Extensive	Uncommon	Uncommon	Uncommon	Uncommon
ASPEN	Common	Uncommon	Uncommon	Uncommon	Uncommon
PONDEROSA PINE	Uncommon	Uncommon	None	None	None
LODGEPOLE PINE	None	None	None	None	Uncommon

KEY

Extensive - Type occurs on more than 50 percent of the area.
Common - Type occurs on 10 to 40 percent of the area.
Uncommon - Type occurs on less than 10 percent of the area.
None - Type does not occur in area.

contain exposures of the Precambrian granite and quartzite; most canyons have been cut into the lowest sedimentary formation overlying the Precambrian rocks and are enclosed by walls of limestone ledges and slopes of softer rock and soil. Areas between the stream valleys consist of moderate to steep slopes and ridges, capped by hard sandstone in the northern part of the WSA and topped by less resistant sandstone and siltstone to the south. Slopes throughout the WSA are unstable and subject to failure ranging from rockfall in most of the area to landslides, mudslides, and soil creep in small, particularly hazardous areas. There are no known intrusive igneous rocks or volcanic rocks within the WSA.

SOILS

Soil productivity varies considerably within the WSA as a function of landform, slope, and parent material. The Soil Survey of the Piedra Area, Colorado, (Bauer, R.F. USDA Soil Conservation Service and Forest Service, April, 1981) has identified three major soils series comprising about 75 percent of the Piedra WSA. These are:

The Carracas Soils - These soils occur mainly in the southern portion of the area, on ridge tops and steep canyon sideslopes. They are medium textured, forming from materials weathered from the interbedded shale and sandstone of the area. These soils have low inherent fertility level and are not very productive from a range or timber standpoint. Due to slope and runoff characteristics, they will erode easily if disturbed. They will not vegetate readily due to low fertility levels and the low rainfall zone in which they are found.

The Chris Soils - These soils make up a major portion of the area and occur on the steep canyon sides in the central and northern portions of the unit. They are deep soils with gravely or stony loams over clayey textured subsoils. Depth to sandstone or shale varies from 40 to 80 inches. They also are forming from shales and sandstones in the area. These soils have limited timber productivity. Neither are they very productive from a range standpoint. Erosion hazard is high, and most importantly, these soils are prone to mass slumping and sliding.

The Dunton Soils - These soils occur on the lesser sloping upland areas. They are moderately deep, medium to fine textured soils that have developed over sandstone. Depth to hard sandstone bedrock varies from 30 to 40 inches. These soils are fairly productive from a timber and range standpoint. Erosion is usually not a serious problem, but these soils are easily compacted when wet. They have a high windthrow hazard and reforestation can be rather difficult.

Included among the soils described above are bare rock outcrops of shale, sandstone, and interbedded shales and sandstones. These areas are typically on extremely steep slopes and support little or no vegetation.

SOCIAL AND ECONOMIC SETTING

The Piedra Wilderness Study Area is within the Pagosa Human Resource Unit (HRU), one of three areas of analysis within the area of social and economic influence of the San Juan National Forest. This area, along with the Animas and Montelores HRU's, was delineated to assist in designing management actions that would be responsive to local issues, conditions and needs. The Pagosa HRU contains portions of Hinsdale and Mineral Counties, and virtually all of Archuleta County.

POPULATION, EMPLOYMENT, AND INCOME

Archuleta County's population grew by 33 percent between 1970 and 1980, from 2,733 to 3,631. State projections call for the population to double by the year 2010. Employment in the area is primarily in ranching, logging, retail trade and tourism sectors; therefore, much of this employment is seasonal. Unemployment, a chronic problem, was nearly 12 percent in 1980. The average per-capita income in Archuleta County in 1980 was $5,222.

LIFESTYLE

The predominant lifestyle in the Pagosa HRU is characterized by its rural mountain setting, with many of the residents dependent on the National Forest for part or all of their livelihoods. Ranching, logging and tourism, including outfitter-guide operations, are all occupations closely associated with management of the Forest. Many newer residents of the HRU are either retirees or "emigrants" from urban areas who moved to the area specifically to enjoy the rural mountain lifestyle. These newer residents tend to be more oriented toward recreational uses of the National Forest rather than toward commodity production.

ATTITUDES, BELIEFS, AND VALUES

Public awareness of the recreational environment of the National Forest is increasing with immigration to the area. There is a changing public attitude toward protecting and preserving rather than developing and using Forest resources such as timber, forage and minerals. In the future, direct conflicts can be anticipated between those who hold "preservation" attitudes and those who believe resources should be developed to meet local income and employment needs.

SOCIAL ORGANIZATION

While most of the community services found in other areas are available in the Pagosa HRU, rapidly rising populations are placing strains on school systems, medical facilities, street and road maintenance, and law enforcement capabilities.

POPULATION AND LAND USE

Until a few years ago, Hispanics constituted a majority of Archuleta County's population. Recent population growth has changed this mix, but the Hispanic influence is still extremely strong. Population growth has created a significant shift in land uses, with increasing conversions of ranchland into housing subdivisions and resorts.

RESOURCE AND SUPPORT ELEMENTS

RECREATION

Developed recreation within the area is non-existent as there are no structures and no developments other than 55 miles of trails. Dispersed recreation use is light. Current use, which is approximately 6,100 recreation visitor days (RVD's) annually over the 41,500 acre area (0.15 RVD's per acre per year) is low compared to other wildernesses and dispersed recreation areas in the San Juan National Forest.

Recreation activities include big game hunting, fishing, hiking, horseback riding (with associated camping), viewing scenery, nature study, and cross-country skiing. Other activities occur in limited amounts, including river rafting, kayaking, and motorcycle riding on trails.

The Piedra WSA has 21,700 acres available for primitive recreation opportunities and 19,800 acres available for semi-primitive non-motorized opportunities. Current use is approximately 12 percent of capacity.

Visual Resource

Visual resources of the area are moderately varied resulting from the preponderance of broad slopes and valleys with lateral canyons. Aspen and other vegetation form colorful displays during the fall that add contrast among dark spruce and fir. The Piedra River Canyon contains a variety of rapids, pools, and small waterfalls and constitutes the outstanding visual feature of the area. Water is clear with a high degree of clarity except following heavy rains. About 10 percent of the WSA can be characterized as having distinctive or outstanding scenic quality. The remainder is common and similar to the landscape characteristics of the surrounding area.

Cultural Resource

Although no extensive cultural resource surveys have been undertaken in the WSA, one significant archaeological site, an aboriginal camp, has been identified. Other camps may be discovered in the area although it is unlikely that finds will be numerous or that any structural ruins exist. The area was apparently not desirable for permanent settlement by native peoples. No important historic properties are known to exist either within or in the vicinity of the WSA. Generally, the area is considered to be of low historical interest.

The WSA is situated in the historic territory of the Ute Indians, but archival research and contacts with members of the Southern Ute and Ute Mountain Ute Tribes have failed to identify any specific sites important to the Ute peoples.

WILDERNESS

The Piedra WSA is primarily natural in character. There are no major "imprints of man" that would require rehabilitation. Portions of the

area have been used for grazing of livestock, but this is not evident to the casual observer. The area provides opportunities for primitive recreation at elevations between 6,800 and 10,500, far lower than most designated wildernesses in Colorado. The WSA also has numerous broad slopes with open parks, and many streams which are attractive to fishermen, hunters, horseback riders and hikers. Many opportunities for solitude exist, although along the Piedra or Sand Creek Trails use can be heavy at times.

FISH AND WILDLIFE

Big Game

Big game species within the area include elk, mule deer, black bear and mountain lion. Primary use is for spring-summer and fall range. However, isolated south and west facing slopes are used as winter range by deer and elk, especially during years of light snowfall. Many of the open points and ridges are considered suitable elk calving areas by the Colorado Division of Wildlife. The area includes an important migration corridor between summer and winter range for deer and elk.

Small Game

Small game species occupying the area include cottontail, band-tailed pigeon, snowshoe hare, and blue grouse. Low-elevation pine areas provide habitat for Abert's squirrel, and the area is well populated with them. Turkeys are reported on First Fork Creek, and mallard and cinnamon teal ducks are occasionally observed.

Non-game and Furbearers

Various song birds, raptors, and small mammals are common. Observed species include chipmunk, pine squirrel, ground squirrel, badger, coyote, weasel, porcupine, pine marten, marmot, bobcat, raven, gray jay, mountain bluebird, beaver, and water ouzel.

Threatened and Endangered Species

There are no known federally-listed threatened or endangered species presently occupying the unit. River otter, a species listed by the State of Colorado as threatened, was reintroduced in 1978. The initial transplant site was at the mouth of Sand Creek on the Piedra River which lies within the WSA. Reintrodution plans call for continuing transplants. Acceptable habitat is located along the Piedra River and most of the larger tributary streams. A limited amount of grizzly bear habitat exists, although there is generally not enough wet feeding areas for good quality habitat. One possible nesting site for peregrine falcon exists at the south end of the WSA, but it is presently unoccupied.

Suitable habitat for wolverine, another species listed as threatened by the State of Colorado, also exists within the area, although no confirmed sightings have been reported.

Fish

The Piedra River and its major tributaries within the WSA provide cold water fish habitat ranging from fair to excellent quality. Included are cutthroat, rainbow, brown, and brook trout, although not generally in mixed populations.

In addition, the Piedra River contains non-game fish, including dace, sculpin, and suckers. Tributaries of First Fork Creek support the Snake River variety of cutthroat trout. Although several streams in the area contain habitat suitable for natural reproduction, periodic stocking is necessary to maintain fishable populations under present harvest regulations.

RANGE

Cattle and recreation horses graze approximately 70 percent of the area, with concentrations of grazing areas along drainages and bottoms. Most range is in satisfactory condition. There are nine spring developments and four miles of drift fences in the southern half of the area. Current livestock grazing is 2,860 animal unit months per year, and occurs on portions of five different allotments. Four of these are cattle allotments and one is a sheep allotment, which is currently vacant. Of the cattle allotments, three are intensively grazed (deferred and rest-rotation systems) and one is extensively grazed under a continuous grazing system.

TIMBER

Of the 41,500 acres within the WSA, 40,018 acres or 96 percent is classified as "capable" of timber production. Capable forest land is defined as land having the biological growing potential to produce at least twenty cubic feet of wood per acre per year. Ninety-five percent of the capable timber land is sawtimber. Productivity of this land ranges from average to below average for the Forest, and no harvesting has taken place in the WSA. The predominant timber type is Douglas-fir which covers 52 percent of the capable forest land. The distribution by timber type and size class is shown below.

Acres Capable of Timber Production by Type and Stand Size Class

Timber Type	Stand Size Class				
	Non-stocked (0-300 trees per acre)	Seedling/ sapling	Pole timber	Saw-timber	Total
Ponderosa pine	37	-	295	692	1,024
Spruce-fir	-	7	1,604	5,453	7,064
Douglas-fir	-	-	258	20,728	20,986
Aspen	-	-	-	10,944	10,944
Total	37	7	2,157	37,817	40,018

The current inventory on capable forest lands is 89.9 million cubic feet or 309 million board feet of timber. Most volume is in the Douglas-fir type. The distribution of inventory volume is shown below.

Inventory Volume by Timber Type

Timber Type	Million Cubic Feet	Million Board Feet
Ponderosa pine	1.5	4.1
Spruce-fir	23.7	90.2
Douglas-fir	43.8	186.2
Aspen	20.9	28.5
Total	89.9	309.0

Capable forest land occurs on all slopes, although over half (52 percent) occurs on 30 to 60 percent slopes. This breakdown is shown below.

Capable Forest Land Acres by Type and Slope Class

	Slope Class			
Type	Less than 30%	30 - 60%	More than 60%	Total
Ponderosa pine	70	907	47	1,024
Spruce-Fir	2,513	4,462	89	7,064
Douglas-fir	7,683	9,953	3,350	20,986
Aspen	4,735	5,350	859	10,944
Total	15,001	20,672	4,345	40,018

WATER

Water Yield

Water yield is estimated at 41,500 acre-feet on an average annual basis or one acre-foot/acre/year. All of this water drains into the Piedra River which flows through the WSA. Primary tributaries of the Piedra

River within the WSA include First Fork, Sand Creek, Sheep Creek, and Indian Creek. Although the Piedra River is the major river of the WSA, a major portion of its flow is generated from tributaries upstream from the WSA. Consumptive water uses within the WSA include water developments for domestic livestock and wildlife. Non-consumptive uses of water include fishing, river floating, and maintenance of aquatic and riparian habitat. Outside of the Piedra WSA, upstream and downstream uses of water from the Piedra River include pasture irrigation, livestock and wildlife drinking, and domestic home use. Non-consumptive uses include fishing and aquatic-riparian habitat maintenance.

Water Quality

Water quality within the Piedra WSA was monitored during 1975 in preparation for the Piedra Wild and Scenic River Study (Sullivan, Water Quality Survey of the Piedra River, San Juan National Forest, p. 69, 1975). Data from 17 stations (six in the WSA) indicate good to excellent water quality and compliance with State of Colorado water quality standards.

MINERALS

Mining and Mineral Leasing Activity

Mining and mineral leasing activity in the Piedra WSA is at relatively low levels. The following table summarizes current mineral activity:

Activity Type (As of April 30, 1982)	Number	Acres
Patented Mining Claims	0	0
Unpatented Mining Claims	12	240
Producing Sites or Known Reserves	0	0
Federal Oil & Gas Lease Applications	5	1024
Federal Oil & Gas Leases	0	0

Unpatented mining claims located between 1966 and 1968 may contain uranium deposits. About 1,000 acres in the extreme southern tip of the WSA and about 25 acres along the western edge are presently under application for Federal oil and gas leases. Five lease tracts have been applied for but no leases have been issued and no geophysical exploration activity has been proposed.

Mineral Potential

The potential for significant development of locatable and leasable minerals in the WSA is relatively low. This is evidenced in part by the low level of exploration activity taking place. The following table summarizes potential for locatable and leasable minerals in the WSA:

Area Rated As Having High/Moderate Potential for:	Acres	Percent of Study Area
Locatable minerals	910	2.2
Leasable minerals	1450	3.5

Of the locatable and leasable minerals occurring within the area, those most likely to be economically recoverable include uranium, oil and gas, limestone, gravel, and geothermal resources. Uranium may occur in sandstones and limestones along the north, east, and southeast edges of the WSA. The most probable areas are located in the north, where present mining claims are staked, and to the southeast, just outside the WSA boundary.

The potential for oil and gas exists in the southern portion of the WSA. Four lease applications are pending on the southern portion and one on the western boundary of the WSA. No drilling or geophysical exploration activity has been undertaken.

Both limestone and stream gravel aggregate may represent recoverable resources although the quality and extent of these materials have not been evaluated and no interest in exploration for these resources has been shown to date. Potential for geothermal resources exists at First Box Canyon on the Piedra River along the WSA boundary, although no interest in study or exploration has been evidenced.

Geological Survey - Bureau of Mines Findings

A U.S. Geological Survey - Bureau of Mines Mineral Study is scheduled for the area during the summer of 1982.

LANDS

Lands Ownership

All lands within the 41,500-acre Piedra WSA are Federal lands administered by the U. S. Department of Agriculture, Forest Service. All surface and mineral rights are owned by the United States.

Special Land Uses

Although there are no improvements under special land use permit, there are several outfitter-guide permits for the area. These fall under the category of recreation-type permits and provide a long-established use on the Piedra WSA. These permits are the source of livelihood for several local residents, and provide a needed service in the area. They are distributed fairly evenly throughout the WSA.

Power Withdrawals

A power withdrawal (Power Site Classification No. 357 - withdrawn October 24, 1944) occurs within the WSA along the length of the Piedra River. It encumbers approximately 2,200 acres. No further action has been taken since the withdrawal, and there is little likelihood of development taking place. The Federal Energy Regulatory Commission is scheduled to review this withdrawal for possible revocation within the next three years.

Proposed Impoundments

A potential hydroelectric site exists in the First Box Canyon of the Piedra River and has the capacity for generating 40,000,000 kilowatt hours annually (USDI-Bureau of Reclamation, O'Neal Park Project-Colorado, Reconnaissance Report, p. 2, 1956). Costs determined at the time of the USDI report indicated a benefit/cost ratio of 0.86/1. No further action has been taken since the reconnaissance report which established the project. A letter from the Federal Energy Regulatory Commission confirms that no plans exist for development of the First Fork hydroelectric site. This document is available for review in the Forest Supervisor's office in Durango.

FACILITIES

There are nine livestock water developments in the Piedra WSA consisting of small spring developments. There are also a total of four miles of barbed wire drift fences for livestock management purposes.

Approximately 55 miles of trails are located within the WSA. The official names and numbers of these are listed below:

Trail Name	Number
Sheep Creek Trail	599
Indian Creek Trail	588
First Fork Trail	538
Sand Creek Trail	593
Piedra Trail	596
Coldwater Trail	597
Baldy Mountain Trail	536
Coldwater Stock Trail	598

Access to the Piedra WSA from the south is provided via the First Fork Road (Forest Road 622) and First Notch Road (Forest Road 620), both of

which come within one-fourth mile of the boundary. Access from the north is provided via Piedra Road (Forest Road 631) and Sand Creek Bench Road (Forest Road 642), both of which come within one-eighth mile of the boundary.

PROTECTION

Air Quality

The Piedra Wilderness Study Area is designated as a Class II air quality area. This classification allows only moderate degradation over baseline concentrations of sulfur oxides and particulate matter.

Fire

Fire has always been a natural component of the ecosystems in the area. A naturally occurring fire regime has the effect of reducing fuels, maintaining wildlife habitat diversity, creating browse, and preventing the attainment of climax vegetation across large areas of land. In recent years, natural fires have generally been excluded from the area by intensive control and suppression efforts. In 1956, the First Fork fire burned 1,200 acres and in 1943, the Coffee Creek fire burned 135 acres, but since then, there have been no major fires. Most fires result from lightning strikes and are controlled at less than 10 acres in size.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

This chapter outlines environmental effects that would result from implementing the two alternatives under consideration. It is based on information in Chapter III as well as additional information contained in the draft Environmental Impact Statement for the Forest Plan. The first section describes environmental consequences as they relate to individual resources, and the second section deals with overall wilderness suitability.

RESOURCE ENVIRONMENTAL CONSEQUENCES

RECREATION

Under the suitable alternative, the WSA would be managed for semi-primitive non-motorized recreation on 20,000 acres and for primitive recreation on 21,500 acres. Under such a regime, the area could theoretically accommodate 52,700 recreation visitor days (RVD's) per year while meeting wilderness objectives and protecting wilderness resource values. Based on a 1980 Resource Planning Act (RPA) value of $8.00 per wilderness RVD, the value of use at capacity is $421,600 annually.

Under the unsuitable alternative, the WSA would most likely be managed as follows: semi-primitive non-motorized recreation on 3,300 acres; semi-primitive motorized recreation on 1,900 acres; roaded natural appearing recreation on 24,500 acres; and rural recreation on 11,800 acres. Under such a regime, the area could theoretically accommodate 242,500 RVD's per year while meeting recreation objectives and protecting resource values. Based on an RPA value of $3.00 per RVD, the value of use at capacity is $727,500 annually.

Major uses of the area, which include hunting, fishing, and viewing scenery, would most likely increase under the unsuitable alternative as a result of improved access. User conflicts would also increase as these forms of recreation share available land area with motorized recreation use which would increase in proportion to development of the road system into the area. The small amount of motor biking which presently takes place would be reduced to zero under the suitable alternative.

A five-mile stretch of the Piedra River has been determined suitable for "wild" classification in the National Wild and Scenic Rivers System, but this fact has no major bearing on the suitability of the area for wilderness designation.

In summary, the two alternatives would result in significantly different recreation capacities and types of use. The unsuitable alternative would result in a recreation capacity over four times greater than that of the suitable alternative and would manage over half the area for roaded natural appearing recreation. The suitable alternative manages the entire area for non-motorized forms of recreation, approximately half for primitive recreation and half for semi-primitive experiences.

CULTURAL AND HISTORIC RESOURCES

Environmental consequences on cultural and historic resources should be limited under either alternative due to the low potential for significant sites to exist within the WSA.

There are no known effects on Native American religious values under either alternative.

VISUAL RESOURCE

Under the suitable alternative natural landscape character would be maintained primarily by natural ecological changes.

Under the unsuitable alternative various management practices could impact existing visual quality. Examples are road construction and certain timber harvest methods.

WILDERNESS

Except for a small amount of motorcycle use which has occurred, the entire Piedra WSA has been managed to retain its wilderness character since its consideration for inclusion into the National Wilderness Preservation System. The area would add an extra dimension to the NWPS because of its low mountain elevation and vegetation types that are not common in other wildernesses. The proximity of the WSA to a major local highway and Forest roads would provide access to a rather unique type of wilderness experience not presently represented in this vicinity.

Under the unsuitable alternative, mineral activity, timber harvest and associated road system development could significantly reduce opportunities for solitude, and effect the natural integrity and scenic values which presently characterize the area.

WILDLIFE

Effects on wildlife of either alternative are difficult to predict. As human activity increases in any case, impacts on wildlife increase as well. Use of the Piedra WSA as summer range and as a migration route by deer and elk could decrease as more developmental activities take place. Fish populations would also be affected by increased pressure on fisheries. The unsuitable alternative would allow activities such as timber harvesting and prescribed burning to improve wildlife habitat. Opportunities to manage wildlife habitat and thereby increase wildlife numbers are numerous because of productive soils, moderate slopes and dense tree cover that exist in the WSA.

However, the suitable alternative would not have a major effect on species composition in the area. Natural ecological diversity presently is low favoring those species adapted to old growth timber stands. Opportunities for any needed habitat improvement through vegetation manipulation would be foreclosed under the suitable alternative. Also, opportunities to improve fish habitat would be precluded.

RANGE

The suitable alternative would not significantly alter the current livestock use level of 2,860 animal unit months (AUM's) per year. The unsuitable alternative would allow manipulation of vegetation primarily through timber and wildlife activities. This would result in increased livestock forage, especially in transitional range, to 3,875 AUM's per year. It would also require additional structural range improvements in order to use the increased forage. These water developments would also benefit wildlife. Neither the suitable or unsuitable alternative would significantly affect current livestock forage, although the suitable alternative would preclude any increases in range livestock forage from vegetative manipulation projects.

TIMBER

The suitable alternative would result in reclassification of the timber in the Wilderness Study Area from the "deferred" to the "reserved" category, although under either of these classifications, timber is not suitable for harvest.

The unsuitable alternative would permit timber management on the entire 40,018 acres of capable forest land (See Chapter III). On a portion of this area, timber harvesting would currently not be considered technically or economically feasible because of steep slopes, fragile soils and low volumes. Actual timber yield from the WSA would be governed by land use allocation. Some management prescriptions preclude planned harvest.

Yield estimates determined in the Forest planning process were based on a concept of maximum commodity outputs. This allocation classifies 33,941 acres as suitable for timber production, which is 85 percent of the capable forest land within the WSA. Most of the suitable forest land (52 percent) is in the Douglas-fir timber type. Ninety-five percent of the suitable forest land is presently occupied with sawtimber size trees. The following table displays acres of suitable timber by type and size class.

Area of Suitable Timber by Type and Stand Size Class

Timber Type	Stand Size Class				
	Non-stocked (Acres)	Seedling/ sapling (Acres)	Pole timber (Acres)	Saw-timber (Acres)	Total
Ponderosa pine	-	-	-	55	55
Spruce-fir	-	7	1,554	5,020	6,581
Douglas-fir	-	-	247	17,549	17,796
Aspen	-	-	-	9,509	9,509
Total Acres	-	7	1,801	32,133	33,941

Long-term sustained yield on this suitable timberland is computed from the estimated growth rate of managed stands multiplied times the number of suitable forest acres. These estimates by timber type are shown below.

Long-Term Sustained Yield of Suitable Forest Land by Timber Type

Timber Type	Thousand Cubic Feet Per Year	Thousand Board Feet Per Year
Ponderosa pine	2	8
Spruce-fir	355	1,420
Douglas-fir	961	3,844
Aspen	190	760
Total	1,508	6,032

Approximately six million board feet (MMBF) of timber could be produced annually under the unsuitable alternative, all of which would be foregone under the suitable alternative. By placing approximately 34,000 acres under timber management, additional non-timber benefits would also accrue. Timber harvesting results in increased forage available to both domestic livestock and wildlife, and also affords opportunities for fuels treatment for fire hazard reduction. Increased water yield is also a result of timber management.

There are additional assumptions concerning the six MMBF per year that could be produced under the unsuitable alternative. One is that, although this volume would be added to the long-term productive capacity of the Forest, it would not necessarily be immediately available for harvest. The area would require an extensive and well-planned road system. Logistics and budgetary restrictions could cause such a project to span several years or more. Also, this estimate is not to imply that every year six MMBF of timber would be harvested from the Piedra WSA. Harvesting could take place elsewhere on the Forest at higher levels because at some point in the future, volume from the Piedra WSA would be harvested. The area represents one of the few contiguous blocks of land on the Forest heretofore uncut yet fairly accessible from a timber management standpoint.

WATER

Water Yield

Under the suitable alternative, future water management activities in the Piedra Wilderness Study Area, except for cloud seeding, would be excluded unless a specific project was approved by the President of the

United States. Most snowpack management activities, such as small clearcuts, are incompatible with wilderness management. Under the unsuitable alternative, the area would be available for a range of water management activities. Although the spruce-fir and aspen zones of the Piedra WSA are near optimum elevation for water yield increase, the predominately southern aspect of the WSA would reduce the potential to effect significant yield increases.

Water yield under the suitable alternative is approximately 41,500 acre-feet per year, whereas under the unsuitable alternative, yield could be increased to a maximum of 44,860 acre-feet per year. This represents an eight percent increase over current yield, although this level could only be reached through widespread application of clearcuts and other water management techniques.

Water Quality

Under the unsuitable alternative, road construction and timber harvesting could be expected to increase sediment yield by 10 percent to 35 percent depending on the type and amount of road construction and timber harvests. This increased sediment should not necessarily be considered an unacceptable consequence; however, because through proper mitigation measures, sediment yield could be maintained within allowable limits.

The suitable alternative would maintain water quality at existing high levels although some degradation could occur from concentration of wilderness users along streams in the area. Mitigation measures could include camping restrictions and limitations on number of users.

Water Uses and Water Rights

Neither the suitable nor the unsuitable alternative would significantly affect existing water uses. Selection of the suitable alternative would prohibit development of a hydro-electric site along the Piedra River unless special approval were given by the President of the United States, but it is unlikely that such a project would ever be seriously proposed. The potential to increase water yield for downstream uses would be virtually eliminated under the suitable alternative. Water development needs for livestock grazing could be provided for under the unsuitable alternative but opportunities to do so would be limited under the suitable alternative.

MINERALS

The two alternatives differ significantly in their effects on the various stages of mineral exploration and development. Mineral exploration activities can legally take place under both alternatives and may be undertaken regardless of designation. If a company has adequate time to do the required exploration and is not unreasonably restricted in its access and movement within the area, the feasibility of developing a mineral resource will be based on the normal costs of doing business. This will be the case under the unsuitable alternative. If, on the other hand, a company foresees that it will not have time to validate its claims by the December 31, 1983 minerals withdrawal deadline under

the suitable alternative, or that access and movement will be severely restricted, it may be discouraged from further investment in the exploration effort. The additional costs of mitigation and restoration could also make a normally feasible project uneconomical under the suitable alternative.

Rehabilitation of disturbed sites to a condition suitable for semi-primitive motorized or non-motorized recreation under the unsuitable alternative is feasible and reasonable, although productivity on these sites may be considerably reduced for long periods of time. This would involve regrading, revegetating, and restoring production of the land but not restoring the original contours of the land surface. Large flat areas may remain as evidence although the area would be essentially natural in character. Rehabilitation of disturbed sites to a condition suitable for wilderness would mean restoration of natural ecosystems. In many cases, this degree of restoration may not be technically or economically feasible in the short term.

As of April 30, 1982, there were 12 unpatented mining claims, comprising approximately 240 acres, and 5 oil and gas lease applications, comprising approximately 1,024 acres, located on the WSA. About 2 percent of the WSA is rated as having a high to moderate potential for locatable minerals and 3.5 percent for leasable minerals. Although mineral exploration and development may legally take place under either alternative, feasibility under the suitable alternative may be limited by increased access costs as well as environmental constraints and mitigation measures required in the operating plan. There is also the possibility that mineral discoveries could be foregone following withdrawal of the WSA from mineral location and leasing under the suitable alternative.

LAND STATUS

The suitable alternative could result in withdrawal of the area from mineral entry, which would be scheduled to occur after December 31, 1983 under provisions of the 1964 Wilderness Act. Although there is a possiblity that additional land will be taken to patent before that time under provisions of existing mining laws, this is not likely due to the overall low mineral potential of the WSA.

Neither of the two alternatives would have any anticipated effects upon existing special land uses.

LANDFORM AND SOILS

The unsuitable alternative would allow a number of soil disturbing practices. With the steep slopes and sensitive soils (Chris and Carracas) there is a great potential for accelerated erosion. Even with mitigating measures, erosion rates could surpass tolerance level limits. Also, major disturbances could stimulate land slumps and slides on the Chris soil areas, which would increase maintenance costs on roads and cause potential increases in sedimentation. Due to the long steep slopes, soil loss due to erosion has a high probability of becoming sediment in streams.

The suitable alternative would essentially have little effect on the soils resource. Natural forces and erosion rates that are presently acting on the area would continue, and there would be no major increases in erosion or sedimentation.

PROTECTION

Air Quality

There is no evidence to indicate that either alternative would have any major impacts on the current Class II designation for the area or on the air quality protection requirements within or without the area.

Fire

Under the suitable alternative, fire could potentially resume a more natural role in the ecology of the area. Because of its limited size as well as the need to protect adjacent areas from wildfire, it would not be possible to implement a complete natural fire policy. Nevertheless, a fire management policy incorporating the use of naturally occurring fires burning within prescription could be implemented to promote a wilderness environment truly shaped by naturally-occurring phenomena. Without such a policy, wildfire occurrence and intensity would probably increase in the long-run due to natural accumulation of ground fuels. As the possibility of major fires increased, adjacent lands would be increasingly threatened as well. Under this alternative, transportation of personnel to fires as well as suppression efforts would be generally restricted to non-mechanical means. This would increase response time and enhance the likelihood of larger fires.

Under the unsuitable alternative, a fire management policy could be implemented which included opportunities to reduce ground fuels through timber harvesting, prescribed burning and by mechanical means. Greater use of the area could increase the occurrence of man-caused fires.

Integrated Pest Management

Under the suitable alternative, opportunities for using an integrated approach to pest management would be very limited. Prevention and control of insect and disease outbreaks using an integrated pest management approach would be limited to those situations in which non-wilderness values on adjacent lands are threatened. Forest residues would accumulate and decay through natural processes and could provide suitable conditions for insect and disease epidemics.

Under the unsuitable alternative, opportunities would be available to coordinate pest management with other resource management activities. Chemical control of noxious weeds and removal of dead wood through timber sales for prevention and control of insect outbreaks are examples of such activities.

VEGETATION

Vegetation within the WSA would continue to be influenced mainly by natural ecological forces under the suitable alternative, and livestock grazing would continue to be the major man-caused impact unless major mineral development occurs. This development could remove some land from production. Though reclamation can return disturbed areas to production, vegetative composition and productivity could be altered over long periods of time due to the slow recovery of fragile ecosystems.

Under the unsuitable alternative, vegetation could be modified through timber harvesting, wildlife habitat improvement and range improvement activities.

ECONOMIC AND SOCIAL IMPACTS

The ultimate designation of the Piedra Wilderness Study Area will have certain social and economic effects in the surrounding area. These effects were estimated using a regional Input-Output (I-O) model called IMPLAN. Some basic assumptions involved in using the model are as follows: Estimates of resource outputs and activities resulting from management of the WSA are based on a hypothetical point in time at which resource potentials are being fully realized. Although this point may never actually be reached, it was used as a reference point from which to evaluate the social and economic ramifications of two alternative regimes for the area. This is not an entirely legitimate use of I-O models in that they are built using historic data and therefore are not responsive to regional economic changes over time. They are most adaptable to investigating short-term effects as they relate to population, income, and employment. This model was used to investigate changes at some future date based on the assumption that presently existing relationships between forest outputs and such parameters as population, income, and employment levels will remain unchanged.

POPULATION, EMPLOYMENT, AND INCOME

Neither the suitable nor the unsuitable alternative would have a significant effect on population within the local area. Under the suitable alternative, outputs and uses of the Piedra WSA would be associated with approximately 50 jobs in the local area producing an income of approximately $732,000. Half of these jobs would be in the wholesale and retail trade sectors. Under the unsuitable alternative, outputs and activities from the area would be associated with approximately 220 jobs producing an income of $3,371,000. Ninety of these jobs are in the wholesale and retail trade sectors, and approxmiately 23 would be in the logging and sawmilling sector, where approximately six million board feet of timber per year from the area would be processed.

LIFESTYLE

Neither alternative would significantly alter lifestyles in the area. The only local industry that might be affected to a measurable degree is timber, although fluctuations in national and regional markets have a much more significant effect than would the availability of 40,000 acres of land for timber management.

ATTITUDES, BELIEFS, AND VALUES

Many people in the area, especially newer residents, tend to favor preservation of natural areas such as those within the Piedra WSA. Others more oriented toward land-based economies such as agriculture, feel that resources in the Piedra WSA should be used to support jobs and improve standards of living in the area. A certain amount of polarization and resentment would result from implementating either alternative.

SOCIAL ORGANIZATION

Neither alternative will significantly affect the level or type of social services available in the area. The suitable alternative would result in less payments to counties in the long-run as a result of lower timber and livestock resource outputs.

POPULATION AND LAND USES

Neither alternative would significantly affect land uses and population distribution in the area.

COST-EFFICIENCY ANALYSIS

An economic efficiency analysis was carried out to determine an incremental present net value of wilderness designation for the Piedra WSA. This involved estimating resource outputs from the area under each alternative (See Table II-1), and placing dollar values on these outputs. Prices used were the same values used in the Forest-wide planning effort. Results of the analysis are shown in Table IV-1.

The table shows that the incremental present net value (PNV) of the suitable alternative is negative under both discount rates. "Incremental" refers to the net difference between the PNV's of the suitable and unsuitable alternatives. Based on the outputs and costs considered, the suitable alternative would result in a lowered cost-efficiency of overall management of the Forest. It must be recognized that certain intangible benefits and costs, for which quantification was not possible, were not included in this analysis. An example of such an intangible benefit would be the vicarious satisfaction derived by some individuals in knowing that the area is protected under a wilderness designation even though they have no intention of ever visiting the area themselves. The higher outputs for both timber and recreation under the unsuitable alternative account for a large proportion of the difference between alternatives. Minerals benefits were not included in the analysis because of lack of accurate data resources and dollar values involved.

WILDERNESS SUITABILITY OR UNSUITABILITY

OVERVIEW

The standards to be met by components of the National Wilderness Preservation System (NWPS) were established in the Wilderness Act of 1964. Forest Service policy requires that capability, availability and

TABLE IV-1

Results of Cost-Efficiency Analysis for the Piedra WSA Using Discount Rates of Four Percent and Seven and One-Eighth Percent. (All figures are in thousands of 1978 dollars.)

	Present Values Based On 4% Discount Rate		Present Values Based On On 7-1/8% Discount Rate	
Resource/Cost	Suitable Alternative	Unsuitable Alternative	Suitable Alternative	Unsuitable Alternative
Timber	$ 0	$ 3,074	$ 0	$ 1,945
Water	17,572	18,990	11,120	12,017
Recreation				
Wilderness	9,057	0	5,731	0
Non-wilderness	0	15,574	0	9,856
Range	361	737	229	466
Total Benefits	26,990	38,375	17,080	24,284
Forest Service Costs	2,399	4,324	1,528	2,741
Total Present Net Value (PNV)	24,591	34,051	15,552	21,543
Incremental PNV of Suitable Alternative	-9,460		-5,991	

need for wilderness be established prior to determining the suitability or unsuitability of an area for inclusion in the NWPS. These three criteria are discussed in turn below.

WILDERNESS CAPABILITY

Wilderness capability is analyzed without regard to either the need for more wilderness or the availability of the area for wilderness designation. It is determined by both the degree to which an area possesses the basic characteristics necessary for wilderness designation as well as the degree to which an area can be managed for wilderness.

With respect to the first of these two criteria, the Wilderness Attribute Rating System (WARS), which was developed during RARE II and reconfirmed during the latest planning effort, indicates the degree to which an area possesses wilderness attributes. The system involves a rating for each of several attributes, which are then summed to arrive at a composite WARS rating. Possible scores range from four to 28, with

28 indicating possession of optimum wilderness characteristics. Following is a summary of the WARS rating for the Piedra Wilderness Study Area (RARE II Area No. A2292). Detailed worksheets are in the planning records on file in the Forest Supervisor's Office.

Wilderness Attribute	Rating
Influence on Natural Integrity	6
Influence on Apparent Naturalness	6
Solitude Opportunity	6
Primitive Recreation Opportunity	6
Composite WARS rating	24
Supplementary Wilderness Attributes	3
Scenic Value	3

The rating of 24 is the highest rating of any Wilderness Study Area on the San Juan National Forest. Of all 300 RARE II areas in Colorado the median rating was 19. Thus, basic wilderness characteristics are well represented on the Piedra WSA.

The second element of wilderness capability is "Manageability," the most uncertain aspect of which involves conflicts that might result from future development of mineral resources in the area. The following factors relate specifically to manageability of the area for wilderness:

1. Ability to Manage the Area as an Enduring Resource of Wilderness and to Protect and Manage its Natural Character

   Recreation, grazing and most other resource uses could easily be managed on the Piedra WSA while protecting wilderness character. Surface disturbances relating to mineral development could be controlled under Forest Service Surface Protection Regulations (36 CFR 228), but some impacts should be expected. Impacts from previous exploration are minimal, but if a major discovery were made, impacts could be severe. A roading system necessary to access mineral development could also have significant impacts on the wilderness character of the area. Otherwise, there would be no problems in managing the area to perpetuate in natural character.

2. Size and Shape of the Area

The Piedra WSA contains 41,500 acres and is relatively compact. The boundary of the area is determined by well defined topographic features, on about one-third of the proposed area. The other two-thirds of the boundary crosses drainages or follows broad ridges where precise topographic features do not exist. These boundary areas will be difficult, but not impossible to locate on the ground. The area, in order to be managed as wilderness, would require significant boundary location and maintenance to prevent conflicts with other land management activities.

3. Location Relative to External Influences

The Piedra WSA is located three and one-half miles from U. S. Highway 160 at its nearest point. Forest Road No. 620-622 is within one-quarter mile of the southern boundary and Forest Road No. 631-642 within one-eighth mile of the northern boundary. Considerable timber activity occurs to the north of the WSA. There are minimal external influences that would impair manageability of the area as wilderness. Access is such that users could readily get to the area, yet it is not so close to a major highway as to detract from the wilderness environment.

4. Boundaries

The following points can be made concerning boundaries on the WSA:

-They can be located to avoid conflict with important existing or potential public uses and developments.

-They can be sufficiently described to be posted on the ground, although location and maintenance will be difficult in some areas of the WSA.

-They can be located in some areas to utilize features that constitute a barrier to prohibited use and act as a shield to protect wilderness environment.

-They can be located to provide an opportunity for access and trailhead facilities.

Therefore, boundary location does not pose a major problems with respect to manageability of the area as wilderness.

Based on analysis of both manageability and possession of wilderness characteristics, the Piedra WSA is determined capable for wilderness.

WILDERNESS AVAILABILITY

Value comparison

Availability of an area for wilderness designation is determined, in part, by comparing the value of the wilderness resource with the value

of the non-wilderness resources foregone under the suitable alternative. The value of tangible and intangible wilderness resources should be greater than the values foregone if the suitable alternative is to be recommended. However, the highest and best use of an area with respect to wilderness designation is difficult to assess in such terms because of the difficulty of attaching precise values to the intangible benefits involved.

Wilderness values on the Piedra Wilderness Study Area include:

-potential to provide an opportunity for wilderness recreation experiences for an optimum number of 333 people at one time (PAOT); and

-special protection of rather unique natural ecosystems, wildlife, water quality, and other resources.

Timber, minerals, and recreation represent significant values to be foregone under the suitable alternative. The WSA includes over 40,000 acres of land capable of timber production, from which an estimated six million board feet could be harvested annually. Using an average bid price for the Forest of $24 per thousand board feet (in 1978 dollar terms), this represents approximately $144,000 per year in timber value foregone.

The potential for significant mineral discoveries in the WSA is low, and no attempt has been made to quantify the values involved. The suitable alternative would impose additional environmental constraints on exploration and development activities, resulting in increased costs to prospectors and developers. There is also the slight possibility that a major discovery would be foregone under the suitable alternative due to the minerals withdrawal deadline of December 31, 1983 in the Wilderness Act.

Although recreation would constitute a major use of the WSA under the suitable alternative, the type of recreation, by its very nature, results in a much lower capacity than would otherwise be the case. Therefore, even though the value of a wilderness recreation visitor day ($8.00) is higher than a dispersed recreation visitor day ($3.00), the higher use that could take place under the unsuitable alternative results in a net recreation value foregone under the suitable alternative. This is summarized below:

	Suitable Alternative	Unsuitable Alternative
Recreation Value	$8.00/Recreation Visitor Day	$3.00/Recreation Visitory Day
Recreation Capacity	52.7 Thousand Recreation Visitor Days/Year	242.5 Thousand Recreation Visitor Days/Year
Total Recreation Value	$421,600/Year	$727,500/Year

The recreation value foregone under the suitable alternative is therefore $305,900 per year.

The suitable alternative would preclude projects designed to increase water yield in the Piedra WSA. The suitable alternative would also decrease the opportunity to construct water storage and related facilities in the WSA since water improvements in wilderness require Presidential approval. Currently there are no proposals to construct water developments for livestock or other resources in this WSA.

Existing Constraints and Encumberances

All land within the Piedra Wilderness Study Area is National Forest System land. Activities on unpatented mining claims would be governed by Forest Service Surface Protection Regulations (36 CFR 228), but any surface impacts and access routes could reduce wilderness values.

Effect of Wilderness Designation and Management on Adjacent Lands

The area is topographically well defined in some areas and less so elsewhere. No transportation or utility corridors are proposed through the area. Trailhead and access facilities would be similar with or without wilderness designation. There would be no anticipated adverse effects of wilderness designation on the management of adjacent lands.

Summary

The Piedra WSA is available for wilderness. Values foregone under the suitable alternatives are greatest with respect to timber, minerals, and recreation. There are sufficient opportunities to harvest timber outside the WSA to meet foreseeable needs of local industry for the next fifty years. The overall low mineral potential of the area makes the probability of mineral discovery unlikely. Recreation values foregone are more than offset by the preservation value of wilderness land.

WILDERNESS NEED

The RARE II process dealt with "wilderness need" on a National basis, and the process included extensive public involvement. The San Juan National Forest Land and Resource Management Planning process considered the current and future public need for additional designated wilderness in the general vicinity of the Piedra Wilderness Study Area.

In considering the need for wilderness, certain assumptions were made:

-Visits to designated wilderness will increase with both increasing population and a growing awareness of wilderness.

-Some undeveloped lands provide opportunities for a primitive type of recreation experience outside wilderness.

-Within social and biological limits, management increases the capacity of established wildernesses to support human use without unacceptable depreciation of wilderness resources.

The following factors were considered in determining the need for designated wilderness on the Piedra WSA:

1. Location, Size, and Type of Other Wildernesses in the General Vicinity and Their Distance From the Study Area

Prior to 1980, there were seven wildernesses within a 100-mile radius of the Piedra WSA, with a total of 610,057 acres. Four are administered by the Forest Service and three are administered by the National Park Service. With passage of the New Mexico Wilderness Act of 1980 and the Colorado Wilderness Act of 1980, Congress increased the size of three of these National Forest System wildernesses and established seven new wildernesses within such a radius. The new wildernesses are all within the National Forest System and contain a total of almost .7 million acres. Therefore, there are now fifteen wildernesses with over 1.3 million acres within the 100-mile radius of the Piedra WSA. Twelve are in the National Forest System and three are in the National Park System.

Figure IV-1 shows the location of the wildernesses within a 100-mile radius of the Piedra WSA. Table IV-2 lists acres and recreation use on wilderness in the vicinity of the WSA. The table indicates that there are a number of designated wildernesses in the vicinity of the Piedra WSA, representing a large acreage base. These cover a diversity of ecosystem and landform types, including canyons, sand dunes, and mountainous alpine areas.

2. Present Visitor Pressure on Other Wildernesses, Trends in Use, and Changing Patterns of Use

Because of the large land area represented by designated wildernesses within a 100-mile radius of Piedra WSA, as well as the relatively low population density in this part of the Southwest, overall visitor pressure on other wildernesses is relatively low. This can be partially explained by the fact that wilderness recreation experiences, by definition, require low user density per unit area. Therefore, the low visitor pressure on nearby wildernesses can be interpreted to indicate that existing areas are indeed fulfilling their purpose in providing "opportunities for solitude in areas untrammeled by man." But demand for and use on wilderness areas is expected to increase in the immediate future. Trends indicate that individuals and families will tend to spend more of their vacation time in one location rather than on the road. Wilderness trips provide an opportunity to experience the outdoors in a natural setting, along with a unique type of challenge not available in urban areas. More people are realizing this, and wilderness visits are expected to increase accordingly. Increases in leisure time as well as a growing national awareness of environmental matters will influence this trend as well.

The overall low visitor pressure on nearby wildernesses does not mean that localized overuse is not occurring. Many areas within the San Juan National Forest are very popular, and during summer months, use is at such levels that site degradation occurs and wilderness experiences may be impaired.

FIGURE IV-1

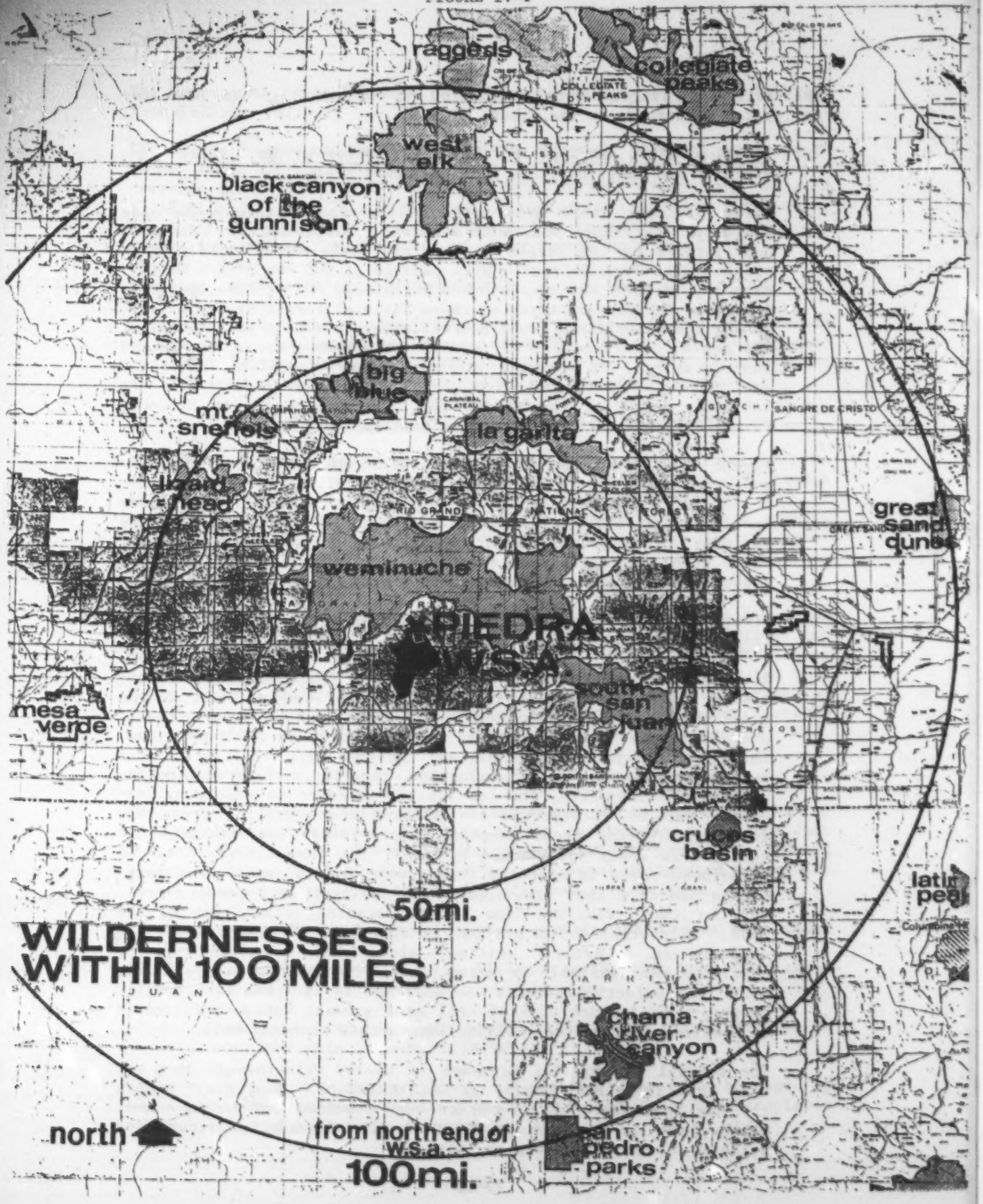

raggeds
collegiate peaks
west elk
black canyon of the gunnison
big blue
mt. sneffels
la garita
lizard head
great sand dunes
weminuche
PIEDRA W.S.A.
south san juan
mesa verde
cruces basin
latin peak
50mi.
WILDERNESSES WITHIN 100 MILES
chama river canyon
north
from north end of W.S.A.
100mi.
san pedro parks

Table IV-2 lists wildernesses within a 100-mile radius of the Piedra WSA along with their size and relative use levels.

TABLE IV-2

Wildernesses Within a 100-Mile Radius of Piedra WSA, Showing Size, Total Recreation Visitor Days and Relative Use Ratings

	Acres	1980 Use	Recreation Visitor Days Acre/Year	Relative Use Rating
Big Blue	97,700	NA	NA	Low*
Black Canyon of the Gunnison (NPS)	11,180	NA	NA	Low*
Chama River Canyon	50,260	5,600	.11	Low
Cruces Basin	18,000	1,600	.09	Low
Great Sand Dunes (NPS)	33,450	NA	NA	Low*
La Garita	108,486	32,300	.30	Low
Latir Peak	20,000	1,500	.08	Low
Lizard Head	40,000	21,000	.53	Moderate
Mesa Verde (NPS)	8,100	NA	NA	Low*
Mt. Sneffels	16,200	11,100	.69	Moderate
Raggeds	68,000	19,000	.28	Low
San Pedro Parks	41,130	50,200	1.22	High
South San Juan	133,463	41,500	.31	Low
Weminuche	463,224	255,400	.55	Moderate
West Elk	194,412	101,500	.52	Moderate
Total	1,303,605			

NPS - Administered by the National Park Service, U.S. Department of the Interior
NA - Data not available
* - Estimated relative use rating.

Relative Use Ratings Based on:

0-.35 Recreation Visitor Days/Acre/Year	Low
.36-.70 Recreation Visitor Day's/Acre/Year	Moderate
.70+ Recreation Visitor Day's/Acre/Year	High

3. Lands' Ability to Provide Opportunities for Unconfined Outdoor Recreation Experiences

While the Piedra Wilderness Study Area has high potential to provide opportunities for unconfined outdoor recreation experiences, these opportunities are not in short supply in the surrounding area.

4. Ability of Plant and Animal Species to Compete With People and Projects

Natural ecological forces will continue relatively undisturbed under either alternative. Plant and animal species native to the area will be maintained under either alternative as well.

5. The Need to Provide Sanctuary for Species that Have Demonstrated an Inability to Survive in Less Primitive Surroundings

No species have been identified on the Piedra WSA that require a wilderness environment for survival.

6. Provide for Preservation of Unique Landform Types and Ecosystems

Table III-1 (page III-2) compares the occurrence of various ecosystem types found on the Piedra WSA includes a significantly higher representation of Douglas-fir, aspen, and ponderosa pine ecosystems than in other nearby wildernesses, resulting from the relatively low elevation of the area. This, combined with the fact that the WSA has a river as its dominant landform characteristic, makes the area rather unique with respect to many other Colorado wilderness areas.

The shows that the area is needed as designated wilderness not mainly because it would reduce pressure on other areas or because additional acreage is called for, but rather because it would add physical and ecological diversity to the NWPS. Lower mountain ecosystems would be preserved in an unmodified setting and would be made available to a variety of recreationists including hunters, fishermen, backpackers, hikers, and horseback riders.

OTHER CONSEQUENCES

None known.

SHORT-TERM USES OF MAN"S ENVIRONMENT vs. THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

There would be no direct effects on long-term productivity or renewable resources resulting from either alternative under consideration. The increased likelihood of minerals activity under the unsuitable alternative would increase the possibility of long-term effects on the renewable resource productivity of the land. However, most surface resource effects caused by mining could be adequately mitigated under Forest Service Surface Protection Regulations (36 CFR 228).

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

With the exception of wilderness opportunities and minerals, there would be no irreversible or irretrievable commitment of resources under the unsuitable alternative. "Irretrievable" refers to a permanent loss of resource production resulting from management activites, whereas "irreversible" refers to long-term unavailability of a resource. Mining

represents an irreversible commitment of non-renewable mineral resources. Mining activity would also involve minimal commitments of livestock forage and timber, as areas become disturbed. By using proper reclamation techniques, however, losses of production can be made short-lived and insignificant in quantity. The wilderness resource could be irreversibly committed, depending on how the area was to be managed under the unsuitable alternative. Development could impact the area to the extent that it no longer qualified for wilderness designation, in which case the wilderness resource would be irreversibly lost.

Under the suitable alternative, mineral resources could be irreversibly lost following the minerals withdrawal deadline after 1983. Certain amounts of other resources, including water, livestock forage, and timber, would be irretrievably lost as a result of the inability to carry out various management activities in a wilderness area. Irretrievable resources are limited to the difference between quantities produced under the suitable alternative and the unsuitable alternative.

PROBABLE ADVERSE EFFECTS THAT CANNOT BE AVOIDED

SUITABLE ALTERNATIVE

- There will be reduced opportunities and an increase in the cost of mineral exploration and development because of the need for more stringent mitigation and restoration measures.

- There will be less opportunities for developing a variety of uses. There will be a loss of semi-primitive motorized recreation opportunities.

- Yield of wood products and the ability to manage timber will be lost.

- Various amounts of water and livestock forage would foregone.

UNSUITABLE ALTERNATIVE

- There may be an eventual irreversible loss of wilderness character through mining, recreation, and timber management activities in the area.

- There will be a reduction in wilderness values and wilderness recreation opportunities.

CONFLICT WITH OTHER GOVERNMENT AGENCY PLANS

There are no known conflicts with plans of other government agencies under either alternative.

CHAPTER V

GLOSSARY

The following is a partial glossary of terms that may be helpful in understanding this report. A more complete glossary can be found in the draft Environmental Impact Statement for the San Juan National Forest, Forest Plan.

Available (Forest Land) - Forest land which has not been legislatively withdrawn or administratively withdrawn from timber production by the Secretary or the Chief of the Forest Service. This classification includes RARE II further planning areas and administrative designation, below the Chief's level, withdrawing land from timber production.

Capable (Forest Land)- Forest land which is capable of growing industrial crops of wood at or above the minimum biological growth potential of 20 cubic feet of wood per acre per year. This classification includes both accessible and inaccessible, stock and non-stocked land.

Continuous Grazing - The grazing of a specific unit by livestock throughout a year or for that part of the year during which grazing is feasible.

Deferred (Forest Land) - Forest land which has been legislatively or administratively designated by the Secretary or Chief for wilderness study or possible additions to the Wilderness System. This classification includes RARE II areas designated as wilderness, but does not include RARE II areas designated for further planning.

Deferred Rotation - Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings or restoration of plant vigor.

Diversity - The relative degree of abundance of wildlife species, plant species, communities, habitat or habitat features per unit of area.

Input-Output Analysis Model (I-O) - A quantitative study of the interdependence of a group of activities based on the relationship between inputs and outputs of the activities. The basic tool of analysis is a square input-output table, interaction model, for a given period that shows simultaneously for each activity the value of inputs and outputs, as well as the value of transactions within each activity itself. It has especially been applied to the economy and the industries into which the economy can be divided.

Integrated Pest Management - A management strategy for suppression of Forest pests which integrates silvicultural, mechanical, biological, and chemical suppression strategies that achieve greater efficiency and safety than the same strategies used alone.

Leasable Minerals - Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulphur (in Louisiana and New Mexico), and geothermal steam.

Locatable Minerals - Those hardrock minerals which are mined and processed for the recovery of metals. May include certain non-metallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica. May include any solid natural inorganic substance occurring in the crust of the earth, except for the common varieties of mineral materials and leasable minerals.

Present Net Value - The difference between the total discounted benefits and the total discounted costs.

Primitive Recreation - A classification of recreation opportunities characterized by an essentially unmodified environment, where trails may be present but structures are rare, and where probability of isolation from the sights and sounds of man is extremely high.

Reserved (Forest Land) - Forest land which has been legislatively or administratively withdrawn from timber production on a permanent basis. Examples of this classification are wilderness areas, primitive areas, research natural areas or special interest areas, or similar formal withdrawals approved by the Chief or higher authority.

Rest-Rotation - A grazing system in which the pastures being roated receive nonuse for a period of plant recovery.

Riparian - Referring to the land bordering a stream, lake or tidewater.

Roaded Natural Recreation - A classification of recreation opportunities that characterizes a predominately natural environment with evidence of moderate permanent alternate resources and resource utilization. Evidence of the sights and sounds of man is moderate, but in harmony with the natural environment. Opportunities exist for both social interaction and moderate isolation from the sights and sound of man.

Rural Recreation - A classification of recreation opportunities that characterizes an area in which the sights and sounds of man are prevalent and the landscape has been considerably altered by the works of man.

Semi-Primitive Motorized Recreation - A classification of recreation opportunities characterized by moderately dominant alterations by man with strong evidence of primitive roads and/or trails.

Semi-Primitive Non-Motorized Recreation - A classification of recreation opportunities characterized by few and/or subtle modifications by man, and with a high probability of isolation from the sights and sounds of man.

Suitable (Forest Land) - Forest lands to be managed for timber production.

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